



INSIDE THIS ISSUE:

What Is Folic Acid? 2

What Are NTDs? 3

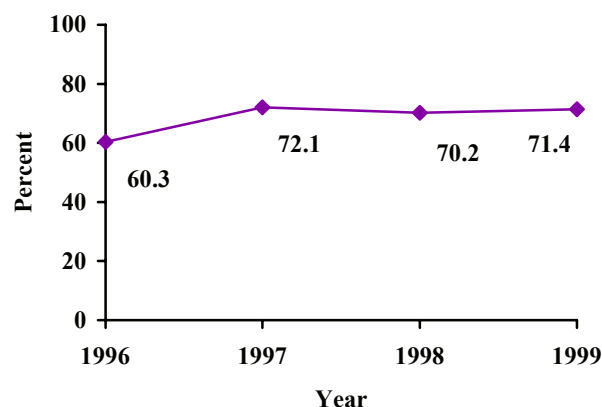
Findings at a glance

- Overall, there was a significant increase in folic acid awareness from 1996-1999.
- Increase most apparent from 1996 to 1997, then stabilized or decreased.
- Less than half of African-American women, women with lower education levels, women receiving Medicaid prior to conception, teenage women, women with no insurance, and women without paternal information on birth certificates are aware of folic acid's benefits.

FOLIC ACID AWARENESS AMONG MICHIGAN MOTHERS, 1996-1999

The primary source of information about number of women who are aware that folic acid consumption helps to prevent Neural Tube Defects (NTDs) is the Pregnancy Risk Assessment and Monitoring System (PRAMS). PRAMS respondents were asked, "Have you ever heard or read that taking the vitamin folic acid can help prevent some birth defects?" Over the years, 1996-1999, the number of women who were aware that folic acid reduces birth defects increased from 60.3 percent in 1996 to 71.4 percent in 1999 (Fig. 1). This significant increase, however, was not apparent in all socio-demographic subgroups of women. Among mothers on Medicaid before or after the pregnancy and among mothers with annual incomes under \$10,000, the increases in folic acid awareness were minimal. The proportion of mothers never attending high school, who were aware of the beneficial effects of folic acid actually decreased over the four year time period, from 35.3 percent in 1996 to 13.8 percent in 1999.

Fig. 1 Percent of all women who were aware that folic acid may help prevent NTDs, MI 1996-1999.



Women with the lowest folic acid awareness were African-American women, women with less than high school education, women who received Medicaid before pregnancy, teenage women, women without paternal information on birth certificates, and women with no insurance. Generally, less than half of all of these women were aware that folic acid helps prevent NTDs.

There is a relatively consistent pattern of folic acid awareness among most subgroups of women. The percent of women

aware that folic acid can help prevent NTDs increased from 1996 to 1997 and has flattened out or decreased slightly since then. This may be explained, in part by the national folic acid awareness campaign in 1995 by the March of Dimes called "Think Ahead." The "Think Ahead" campaign was designed to promote folic acid awareness through multiple channels, including a media campaign, advertisements, and education. This national campaign was

(Continued on page 2)

WHAT IS FOLIC ACID?

Folic acid is vitamin B₉ and is used in vitamin supplements and fortified foods. Folic acid is required for DNA production and is essential for the rapid proliferation of healthy fetal tissues and organs.

Folate is the naturally occurring form of folic acid. It is found in a wide variety of foods including orange juice from concentrate, pineapple juice, cantaloupe, strawberries, kiwis, legumes (canned or dry beans and lentils), eggs, liver, artichokes, asparagus, avocado, collard greens, romaine lettuce, and fresh or frozen spinach.

Folic acid has been added to the nation's grain supply since January 1998 to fortify its nutritional content. Examples of enriched foods include breakfast cereals and breads, as well as enriched rice and pastas. Folic acid is also found in vitamin preparations at varying dosages. These dosage levels include: most multivitamins (400 micrograms), prenatal vitamins (800 micrograms), and folic acid supplements (1000 micrograms).

It is important to note that naturally occurring folate in our foods is not as readily absorbed in our bodies as the synthetic folic acid. It is recommended, therefore, that women of childbearing age take a multivitamin containing folic acid daily, in addition to consuming a varied diet containing folate rich foods. Research has also shown that alcohol consumption interferes with folic acid absorption.

FOLIC ACID

(Continued from page 1)

supplemented by state initiatives beginning in 1994 to promote awareness and consumption of foods containing or fortified with folic acid. The program in Michigan also included an educational model, primarily through presentations to public health practitioners and in 1996, distributing pamphlets to the public. As a result, folic acid awareness increased substantially from 1996 to 1997. In Michigan, there was an overall increase of 12 percent.

Because the number of women aware of the benefits of folic acid has tended to decrease since 1997, another campaign to heighten awareness appears to be needed. The "Think Ahead" campaign sponsored by the March of Dimes in

1995 seems to have been effective. Special attention needs to target efforts to those women previously listed whose folic acid awareness is less than 50 percent. Community-based programs may be the most effective in reaching women in these groups. These groups of women represent portions of the Michigan population that may have limited access to information through normal means such as computers, brochures, or other specific forms of media.

These data from the PRAMS surveillance system only captured information on the awareness of folic acid, not the actual usage of it. The recommendations are for women of childbearing age to take folic acid supplements before pregnancy and through the first trimester. We do not

know how many women are actually taking the supplement before pregnancy. At the current time, we cannot decipher this information from PRAMS survey. In 2000, the PRAMS survey added a question asking how frequently women took a multivitamin within one month prior to conception. The question, however, does not specifically ask about folic acid. Further, we cannot assume that all women taking a multivitamin one month before pregnancy were consuming a multivitamin containing folic acid nor can we assume that these women were taking an additional folic acid supplement. A new method to obtain information on folic acid consumption is necessary and has been added to the 2001-2005 survey.

"It is recommended... that women of childbearing age take a multivitamin containing folic acid daily, in addition to consuming a varied diet containing folate rich foods."

WHAT ARE NEURAL TUBE DEFECTS?

Neural tube defects are serious and often fatal birth defects of the brain and spine. They are relatively common anomalies occurring to one or two infants per 1,000 live births in the United States. These defects are responsible for varying degrees of disability. Approximately 4,000 pregnancies per year among American women are affected by NTDs, one third of which are spontaneously lost or electively terminated. Between 1992 and 1997, approximately 500 live births with NTD occurred in Michigan.

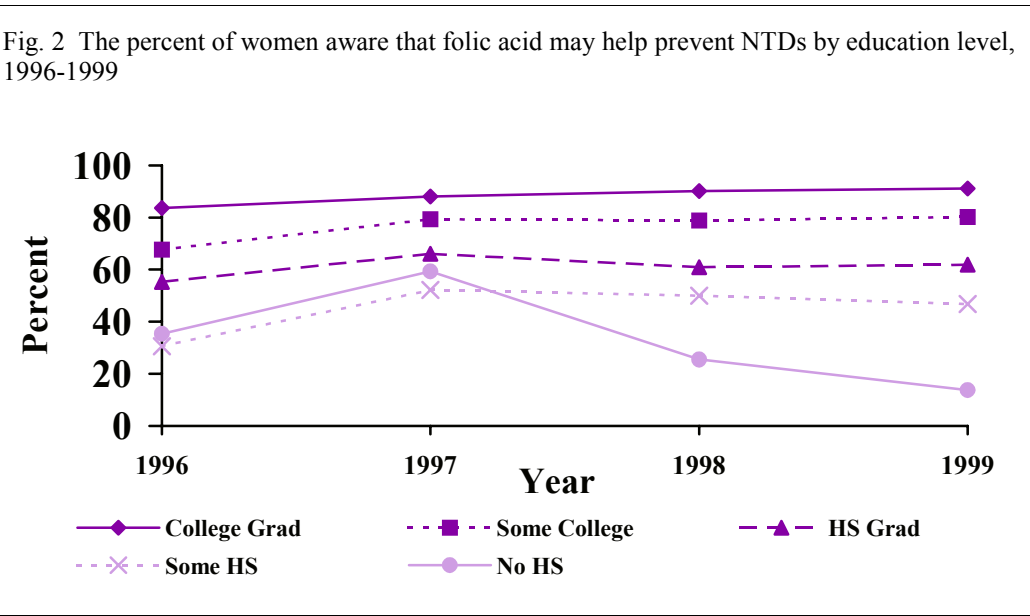
NTDs are caused by incomplete closure of the neural tube which gives rise to the developing fetus' brain and spinal cord. Neural tube closure occurs between the 17th and 30th day after conception, often before a woman is aware she is pregnant. The majority of NTD cases are spina bifida, along with anencephaly and encephalocele.

Spina bifida occurs when the lower end of the neural tube fails to close resulting in improper development of the spinal cord and vertebrae. A fluid-filled sac that contains parts of the spinal cord may accompany the opening in the back. Loss of bowel and bladder control and paralysis of the infant's legs occur. In addition, spina bifida may be associated with hydrocephalous and learning disabilities. Despite this lifelong condition, many individuals with spina bifida lead successful and productive lives.

Anencephaly is a less common NTD that is always fatal. Anencephaly is caused by the failure of the upper end of the neural tube to close. The brain does not develop completely or may be entirely absent. Affected pregnancies often result in miscarriage and live born infants die soon after birth.

Encephalocele is a malformation in which parts of the brain protrude outside the skull in a sac of skin. Babies affected by encephalocele have a relatively high survival rate. The degree of mental disability depends upon the size and extent of brain involvement.

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PRAMS OVERVIEW

PRAMS (Pregnancy Risk Assessment and Monitoring System) is a population based survey of maternal experiences and behaviors before and during a woman's pregnancy and during early infancy of her child. African-American women and women who deliver low birth weight infants are over-sampled in order to ensure more accurate estimates. Each year, approximately 1,000-3,000 new mothers are randomly selected from a frame of eligible birth certificates. A survey is mailed out to the women at two to six months after delivery, followed by telephone reminders to those who have not responded. In addition to the mailed surveys, a stratified systematic sample of African-American mothers is selected from six inner-city hospitals, where an initial interview is conducted followed by a mailed survey two to six months later. This is so we can better capture the experiences among African-American mothers and their infants. The results presented are weighted to represent all of Michigan's mothers and infants.

SUGGESTED CITATION

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